

disc (referred to as a "CD", hereinafter). The input section 1 inputs the digital audio signal into a gain regulation section 2. The gain regulation section 2 regulates the gain for the digital audio signal, and then, inputs the regulated digital audio signal into a digital filter 5. The digital audio signal is then subjected to a computing process, such as a tone control and a low frequency component separation, by the digital filter 5, and the processed digital audio signals are inputted into a PWM signal generating section 6. The PWM signal generating section 6 generates a PWM signal by sampling the digital audio signal based on a triangular wave generated within the digital amplifier, and inputs the generated PWM signal into a driving section 8. The driving section 8 controls a switching section 9 and carries out switching of the switching power supply in response to the PWM signal. Accordingly, a constant voltage pulse signal is generated, and it is inputted into a low pass filter 10 (referred to as "LPF", hereinafter). The LPF 10 filters out a high frequency component from the constant voltage pulse signal, and an analogue audio signal is demodulated from the constant voltage pulse signal. The analogue audio signal demodulated in the LPF 10 is inputted in an output section ¹¹/~~10~~ and

2/10/5

8/31/10/5
the output section ¹¹~~10~~ inputs the analogue audio signal in a loud speaker 12. Consequently, an audio signal is reproduced from the loud speaker 12.

Fig. 3 is an illustration to explain a relation between a level of an analogue audio signal and duty ratios of PWM signals.

The PWM signals shown in Fig. 3 are a PWM signal 30 having a duty ratio of 70%, a PWM signal 31 having a duty ratio of 50%, and a PWM signal 32 having a duty ratio of 20%. As shown in Fig. 3, the level of the analogue audio signal is represented by the duty ratios of the PWM signals. When the analogue audio signal is at a silent level, the duty ratio of the PWM signal is 50%.

Meanwhile, in the digital amplifier as shown in Fig. 2, when an output sound volume from the loud speaker 12 is set to zero, on an operation section, not illustrated, which is connected to the gain regulation section 2, an operation for the setting of zero for the output sound volume from the loud speaker 12 is performed. At this stage, the gain regulation section 2 multiplies the inputted digital audio signal by factor "zero", and converts the digital audio signal into a signal at the silent level. When this digital audio signal at the silent level is inputted in the